

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A fluoropolymer producing method

which comprises polymerizing a radical polymerizable monomer in a manner of continuous polymerization in a defined reaction-field to give the fluoropolymer avoiding the use of carbon dioxide,

wherein said defined reaction-field is in a supercriticality-expression state and under a pressure of not higher than 40 MPa and a temperature of not higher than that higher by 100°C than the supercriticality-expression temperature of the defined reaction-field, having a ratio [ $\rho_m/\rho_0$ ] of not lower than 1.1, where  $\rho_m$  is a monomer density and  $\rho_0$  is a monomer critical density.

wherein said supercriticality-expression state is formed in one-component systems in which one kind of a radical polymerizable monomer exists, or in multicomponent systems in which two or more kinds of radical polymerizable monomers exist,

said radical polymerizable monomer comprises a fluorine-containing ethylenic monomer, and

said fluoropolymer has a weight average molecular weight [Mw] of not lower than 150,000 as determined on the polystyrene equivalent basis, and

a ratio [Mw/Mn] of the weight average molecular weight [Mw] on the polystyrene equivalent basis to a number average molecular weight [Mn] of the fluoropolymer on the polystyrene equivalent basis is higher than 1 but not higher than 3.

2. (currently amended): A fluoropolymer producing method which comprises polymerizing a radical polymerizable monomer in a manner of continuous polymerization in a defined reaction-field in the presence of carbon dioxide amounting to 10% or less of the total number of moles of said carbon dioxide and said radical polymerizable monomer to give the fluoropolymer,

wherein said defined reaction-field is in a supercriticality-expression state, having a ratio of  $[p_m/p_0]$  of not lower than 1.1, where  $p_m$  is a monomer density and  $p_0$  is a monomer critical density,

wherein said supercriticality-expression state is formed in one-component systems in which one kind of a radical polymerizable monomer and carbon dioxide exist, or in multicomponent systems in which two or more kinds of radical polymerizable monomers and carbon dioxide exist,

said radical polymerizable monomer comprises a fluorine-containing ethylenic monomer, and

said fluoropolymer has a weight average molecular weight [Mw] of not lower than 150,000 as determined on the polystyrene equivalent basis, and

a ratio [Mw/Mn] of the weight average molecular weight [Mw] on the polystyrene equivalent basis to a number average molecular weight [Mn] of the fluoropolymer on the polystyrene equivalent basis is higher than 1 but not higher than 3.

3. (original): The fluoropolymer producing method according to claim 2,  
wherein said defined reaction-field further is under a pressure of not higher than 40 MPa  
and a temperature of not higher than that higher by 100°C than the supercriticality-expression  
temperature of said defined reaction-field.

Claim 4 (canceled).

5. (previously presented): The fluoropolymer producing method according to claim  
1,  
wherein the polymerization of the radical polymerizable monomer is carried out in the  
presence of a chain transfer agent in a manner of continuous polymerization.

6. (original): The fluoropolymer producing method according to claim 5,  
wherein the continuous polymerization is carried in a condition that an amount of the  
fluoropolymer in a reaction vessel amounts to at least 8 g per liter of the capacity of said reaction  
vessel in a steady state.

7. (previously presented): The fluoropolymer producing method according to claim  
1 or 2,  
wherein the fluorine-containing ethylenic monomer comprises at least one species  
selected from the group consisting of vinylidene fluoride, tetrafluoroethylene,  
chlorotrifluoroethylene and hexafluoropropylene.

8. (previously presented): The fluoropolymer producing method according to claim  
1 or 2,  
wherein the fluorine-containing ethylenic monomer comprises vinylidene fluoride.

9. (previously presented): The fluoropolymer producing method according to claim 1,

wherein the polymerization of the radical polymerizable monomer is carried out in the presence of a radical polymerization initiator.

10. (original): The fluoropolymer producing method according to claim 9,

wherein the radical polymerization initiator is an organic peroxide.

11. (original): The fluoropolymer producing method according to claim 10,

wherein the organic peroxide comprises a peroxydicarbonate, a fluorine-based diacyl peroxide and/or a fluorine-free diacyl peroxide.

12. (previously presented): The fluoropolymer producing method according to claim 1 or 2,

wherein the polymerization of the radical polymerizable monomer is carried out in the presence of a nonethylenic fluorocarbon.

13. (previously presented): The fluoropolymer producing method according to claim 2, wherein the polymerization of the radical polymerizable monomer is carried out in the presence of a chain transfer agent.

14. (previously presented): The fluoropolymer producing method according to claim 13, wherein the continuous polymerization is carried in a condition that an amount of the fluoropolymer in a reaction vessel amounts to at least 8 g per liter of the capacity of said reaction vessel in a steady state.

15. (previously presented): The fluoropolymer producing method according to claim 2, wherein the polymerization of the radical polymerizable monomer is carried out in the presence of a radical polymerization initiator.

16. (previously presented): The fluoropolymer producing method according to claim 15, wherein the radical polymerization initiator is an organic peroxide.

17. (previously presented): The fluoropolymer producing method according to claim 16, wherein the organic peroxide comprises a peroxydicarbonate, a fluorine-based diacyl peroxide and/or a fluorine-free diacyl peroxide.

18. (previously presented): The fluoropolymer producing method according to claim 1, which comprises continuously supplying the radical polymerizable monomer to the defined reaction-field and continuously discharging fluoropolymer product from the reaction-field.

19. (previously presented): The fluoropolymer producing method according to claim 2, which comprises continuously supplying the radical polymerizable monomer to the defined reaction-field and continuously discharging fluoropolymer product from the reaction-field.

20. (previously presented): The fluoropolymer producing method according to claim 1, wherein said defined reaction-field consists essentially of one or more kinds of radical polymerizable monomers and optionally additional components in amounts which substantially do not influence the supercriticality-expression pressure or supercriticality-expression temperature of the defined reaction field.

21. (previously presented): The fluoropolymer producing method according to claim 2, wherein said defined reaction-field consists essentially of one or more kinds of radical polymerizable monomers and carbon dioxide, and optionally additional components in amounts which substantially do not influence the supercriticality-expression pressure or supercriticality-expression temperature of the defined reaction-field.

22. (previously presented): The fluoropolymer producing method according to claim 1, wherein those components of the defined reaction-field which substantially influence a phase state thereof consist of one or more kinds of radical polymerizable monomers.

23. (previously presented): The fluoropolymer producing method according to claim 2, wherein those components of the defined reaction-field which substantially influence a phase state thereof consist of one or more kinds of radical polymerizable monomers and carbon dioxide.